IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Johansen et al.	)	
	)	
Serial No.: 10/590,260	)	Group Art Unit: 2181
	)	
Filed: 08/18/2006	)	Examiner: Chun Kuan Lee
	)	
For: Control System for a Subsea Installation	)	

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Commissioner for Patents
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APPLICANTS' APPEAL BRIEF

Further to the Notice of Appeal which was filed on April 16, 2010, applicants hereby submit this Appeal Brief in the above-captioned matter.

I. Real Party in Interest:

The real party in interest in this appeal is FMC Kongsberg Subsea AS, which is the assignee of the present application. FMC Kongsberg Subsea AS is a subsidiary of FMC Technologies, Inc.

II. Related Appeals and Interferences:

Applicants are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims:

In the present application claims 16, 17 and 19 are pending, claims 1-15, 18 and 20-22 having previously been canceled. Claims 16, 17 and 19 have been finally rejected, and it is from this rejection that applicants appeal.

IV. Status of Amendments:

No amendments to the claims have been filed subsequent to the final rejection dated December 16, 2009.

V. Summary of Claimed Subject Matter:

Independent claim 16 is directed to a control system which comprises a control module 14 and a common bus that is connected to the control module The common bus comprises at least one cable unit 92 (Fig. 4) to which a plurality of devices 13 are each removably connectable (Fig. 1; ¶0022, lns. 1-15*). The devices 13, which can be actuator modules 37, 38 (Fig. 5; ¶0042), each comprise a bus controller having a unique address (¶0052, lns. 1-4), and the control module 14 comprises means for communicating with each one of the devices over the common bus. As described in the specification, the means for communicating comprises a CAN bus 302, a process interface adapter 306 and a communication adapter 308 (Fig. 6; ¶0055).

The cable unit 92 recited in claim 16 comprises a junction 93 and a plurality of branch cables 91a, 91b . . . 91n (Fig. 4; ¶0040, lns. 1-7). Each of the plurality of branch cables 91a, 91b . . . 91n comprises a first end which is connected to the junction 93, a second end which is connected to a

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* Citations are to the paragraph and line number(s) of the published application, US 2007/0173957 A1.

corresponding electrical connector 90a, 90b . . . 90n that in turn is removably connectable to one of the devices (¶0040, lns. 7-9), and at least two control signal supply cables 94a, 94b, 98a, 98b, 106a, 106b which each extend between the first and second ends and are connected to the junction and the corresponding electrical connector 90a, 90b, 90n (Fig. 7; ¶0045, lns. 1-2; ¶0046, lns. 1-2; ¶0047, lns. 1-2). Furthermore, the control signal supply cables are directly electrically connected to each other at the corresponding electrical connector 90a, 90b, 90n (Fig. 7; ¶0045, lns. 2-4; ¶0046, lns. 2-4; ¶0047, lns. 2-4).

Dependent claim 17 is directed to the control system of claim 16, wherein each of the branch cables 91a, 91b . . . 91n further comprises at least two control signal return cables 96a, 96b, 100a, 100b, 102a, 102b which extend between the first and second ends and are connected to the junction 93 and the corresponding electrical connector 90a, 90b, 90n (Fig. 7; ¶0045, lns. 4-5; ¶0046, lns. 4-5; ¶0047, lns. 4-5).

Independent claim 19 is directed to a control system which comprises a control module 14 and a common bus that is connected to the control module The common bus comprises at least one cable unit 92 (Fig. 4) to which a plurality of devices 13 are each removably connectable (Fig. 1; ¶0022, lns. 1-15). The devices 13, which can be actuator modules 37, 38 (Fig. 5; ¶0042), each comprise a bus controller having a unique address (¶0052, lns. 1-4), and the control module 14 comprises means for communicating with each one of the devices over the common bus. As described in the specification, the means for

communicating comprises a CAN bus 302, a process interface adapter 306 and a communication adapter 308 (Fig. 6; ¶0055).

The cable unit 92 recited in claim 19 comprises a junction 93 and a plurality of branch cables 91a, 91b . . . 91n (Fig. 4; ¶0040, lns. 1-7). Each of the plurality of branch cables 91a, 91b . . . 91n comprises a first end which is connected to the junction 93, a second end which is connected to a corresponding electrical connector 90a, 90b . . . 90n that in turn is removably connectable to one of the devices (¶0040, lns. 7-9), and at least two control signal cables 94a, 94b, 96a, 96b, 98a, 98b, 100a, 100b, 102a, 102b, 106a, 106b which extend between the first and second ends and are connected to the junction and the corresponding electrical connector 90a, 90b, 90n (Fig. 7; ¶0045, lns. 1-2; ¶0046, lns. 1-2; ¶0047, lns. 1-2). Furthermore, each of the control signal cables 94a, 94b, 96a, 96b, 98a, 98b, 100a, 100b, 102a, 102b, 106a, 106b comprises a current loop which is routed through the corresponding electrical connector 90a, 90b . . . 90n and the junction 93 (Fig. 7; ¶¶0048-0049).

VI. Grounds of Rejection to be Reviewed on Appeal:

The grounds of rejection presented for review on appeal are:

(1) whether claims 16 and 17 are unpatentable under 35 U.S.C. 103(a) as being obvious over Applicant's Admitted Prior Art (AAPA) in view of Sitte (U.S. Patent No. 5,469,150) and Suganuma et al. (U.S. Patent No. 7,349,479); and

(2) whether claim 19 is unpatentable under 35 U.S.C. 103(a) as being obvious over Applicant's Admitted Prior Art (AAPA) in view of Sitte and Longsdorf et al. (U.S. Patent No. 6,006,338).

VII. Argument:

A. Claims 16 and 17 are patentable under 35 U.S.C. 103(a) over AAPA in view of Sitte and Suganuma.

1. Claim 16:

The Examiner has finally rejected claims 16 and 17 under 35 U.S.C. 103(a) as being obvious over AAPA in view of Sitte and Suganuma. In this regard, the Examiner asserts that AAPA discloses a control module and a plurality of devices which are connected to the control module. In addition, the Examiner asserts that Sitte discloses a common bus which is connected to a control module and which comprises at least one cable unit to which a plurality of devices are each removably connectable, wherein each one of the devices comprises a bus controller having a unique address, and wherein the control module comprises means for communicating with each one of the devices over the common bus. The Examiner further asserts that Sitte's cable unit comprises a junction and a plurality of branch cables and that each of the branch cables comprises a first end which is connected to the junction, a second end which is connected to a corresponding electrical connector that in turn is removably connected to one of the devices, and at least two control signal supply cables which each extend between the first and second ends and are connected to the junction and the corresponding electrical connector. Finally, the Examiner asserts that Suganuma discloses a CAN system in which the branch cables each comprise at least two control signal supply cables that are directly electrically connected to each other at a corresponding electrical connector.

This rejection is improper because, contrary to the Examiner's assertion, Sitte clearly does not disclose a plurality of devices which are each connectable to a cable unit having a junction and which each comprise a bus controller having a unique address. In addition, Sitte clearly does not disclose a cable unit having a plurality of branch cables which are each connected between the junction and a corresponding electrical connector that in turn is removably connectable to one of the devices. Finally, Sitte clearly does not disclose a cable unit having a plurality of branch cables which each include at least two control signal cables.

The Examiner asserts that Sitte's "junction" is the element 20 shown in Figure 1 and that the "plurality of devices" are the elements 14, 16, 18, 19, 21, 22, 26, 27, 29, 30 and 34 shown in Figure 1. Furthermore, the Examiner asserts that each one of these devices comprises a bus controller having a unique address.

This interpretation of Sitte is incorrect. Although element 20 may arguably be considered a junction, none of the devices 22, 26, 30 and 34 which are shown connected to element 20 comprises a bus controller having a unique address. In this regard, it is important to note that Sitte distinguishes between devices 22, 26, 30 and 34 on the one hand and devices 14, 16, 18, 19, 21, 27 and 29 on the other. Devices 14, 16, 18, 19, 21, 27 and 29 are smart devices (column 7, lines 36-42; column 7, lines 52-54; column 8, lines 9-10). As such, these devices include a microprocessor and have the capability of formulating and transmitting data packets to the communication bus (column 7, lines 21-24).

In contrast, devices 22, 26, 30 and 34 are not smart devices. Rather, these devices are "standard devices which do not have the capability of formulating and transmitting messages" (column 7, lines 29-31). In other words, devices 22, 26, 30 and 34 "do not have the capability of formulating, transmitting or receiving data packets" (column 7, lines 43-45). To be sure, Sitte teaches that the "junction" 20 is what enables the devices 22, 26, 30 and 34 to communicate with the PLC 12. The junction 20 is an "intelligent multiple port interconnect system" which takes the signals from the devices 22, 26, 30, 34 and formulates a data packet for transmission on the communication bus to the PLC 12 (column 7, lines 57-61).

Thus, although Sitte discloses a cable unit which may be considered to comprise a junction 20, the devices 22, 26, 30, 34 which are connected to the junction do not comprise a bus controller having a unique address. Only the smart devices 14, 16, 18, 19, 21, 27 and 29 appear to include a bus controller, but these devices are not connected to the junction 20.

Furthermore, Sitte does not disclose that each "branch cable" which is used to connect a corresponding device 22, 26, 30, 34 to the junction 20 includes a second end which is connected to a corresponding electrical connector that in turn is removably connectable to the device. Sitte simply does not disclose how the devices 22, 26, 30, 34 are connected to their corresponding cables. Although the Examiner asserts that the devices are connected to their corresponding cables in a manner similar how device 700 is connected to cable 740 in Figure 11, this cannot be correct. In contrast to devices 22, 26, 30 and

34, device 700 is a "smart" device. Therefore, Figure 11 does not show how the devices 22, 26, 30 and 34 are connected to their corresponding cables.

In addition, Sitte does not disclose that each "branch cable" which is used to connect a device 22, 26, 30, 34 to the junction 20 comprises at least two control signal supply cables, as is required by claim 16. Sitte does not disclose what is inside the cables connecting the devices 22, 26, 30, 34 to the junction 20. However, contrary to the Examiner's assertion, these cables are not similar to the cable 740 shown in Figure 11. As discussed above the cable 740 is only used to connect a smart device to the common bus 10. To be sure, if the devices 22, 26, 30, 34 were to include two signal wires and two power wires, as does the cable 740, one would presume that the junction 20 would not be necessary.

Thus, contrary to the Examiner's assertion, Sitte clearly does not disclose several critical features of the invention recited in claim 16. Therefore, claim 16 is clearly patentable over any permissible combination of AAPA, Sitte and Suganuma.

2. Claim 17:

As discussed above, the cables which Sitte uses to connect the devices 22, 26, 30 and 34 to the junction 20 do not include two control signal supply cables. Neither do these cables include two control signal return cables.

Therefore, claim 17 is clearly patentable over any permissible combination of AAPA, Sitte and Suganuma.

B. Claim 19 is patentable under 35 U.S.C. 103(a) over AAPA in view of Sitte and Longsdorf.

The Examiner has finally rejected claim 19 under 35 U.S.C. 103(a) as being obvious over AAPA in view of Sitte and Longsdorf. In this regard, the Examiner asserts that AAPA and Sitte disclose every feature of claim 19 except a plurality of branch cables which each comprise two control signal cables that in turn each comprise a current loop.

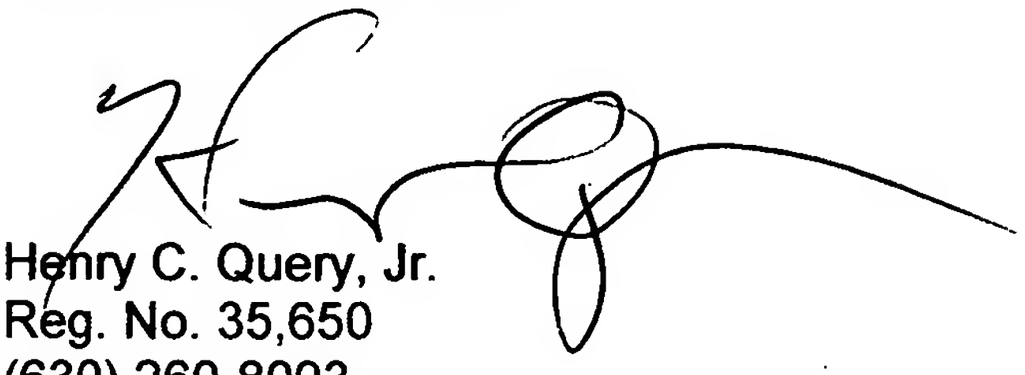
As discussed above, the Examiner's understanding of Sitte is incorrect. Contrary to the Examiner's assertion, Sitte does not disclose: (1) a number of devices which are connected to a junction and which each comprise a bus controller having a unique address; (2) a plurality of branch cables which each comprise a second end that is connected to a corresponding electrical connector which is removably connectable to one of the devices; and (3) a plurality of branch cables which each comprise at least two control signal cables connected between the junction and a corresponding electrical connector.

Moreover, the Examiner has failed to show that either AAPA or Longsdorf disclose these features. Therefore, claim 19 is clearly patentable over any permissible combination of the AAPA, Sitte and Longsdorf.

VIII. Conclusion

In light of the foregoing, applicants submit that claims 16, 17 and 19 are patentable. Accordingly, applicants respectfully request that the Examiner's rejection of these claims be reversed. Favorable action is solicited.

Respectfully submitted,



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Claims Appendix

1 – 15 (canceled).

16. A control system for a subsea installation which comprises:

a control module;

a common bus which is connected to the control module and which comprises at least one cable unit; and

a plurality of devices which are each removably connectable to the cable unit;

wherein each one of the devices comprises a bus controller having a unique address;

wherein the control module comprises means for communicating with each one of the devices over the common bus;

wherein said cable unit comprises a junction and a plurality of branch cables, each of the plurality of branch cables comprising a first end which is connected to the junction, a second end which is connected to a corresponding electrical connector that in turn is removably connectable to one of the devices, and at least two control signal supply cables which each extend between said first and second ends and are connected to said junction and said corresponding electrical connector; and

wherein said control signal supply cables are directly electrically connected to each other at said corresponding electrical connector.

17. A control system according to claim 16, wherein each of said branch cables further comprises at least two control signal return cables which

extend between said first and second ends and are connected to said junction and said corresponding electrical connector.

18 (canceled).

19. A control system for a subsea installation which comprises:

a control module;

a common bus which is connected to the control module and which comprises at least one cable unit; and

a plurality of devices which are each removably connectable to the cable unit;

wherein each one of the devices comprises a bus controller having a unique address;

wherein the control module comprises means for communicating with each one of the devices over the common bus;

wherein said cable unit comprises a junction and a plurality of branch cables, each of the plurality of branch cables comprising a first end which is connected to the junction, a second end which is connected to a corresponding electrical connector that in turn is removably connectable to one of the devices, and at least two control signal cables which extend between the first and second ends and are connected to said junction and said corresponding electrical connector; and

wherein each of said control signal cables comprises a current loop which is routed through said corresponding electrical connector and said junction.

20 – 22 (canceled).

Evidence Appendix

None.

Related Proceedings Appendix

None.